

Hobbies

WEEKLY

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AN ELECTRIC SCORING DART BOARD

THIS novelty dart board can provide a lot of fun. Scores are indicated visually by the appropriate light flashing on, whilst a maximum or 'bull' on the centre of the target rings an electric bell. The simple target shown has four scoring positions, but the same principle can be extended to multiple scoring up to, if desired, the full 1 to 20 and 25 and 50 'bull' scores on the conventional dartboard. Each score, however, requires its own individual indicating lamp and so the five-score target has been chosen as a simple example.

How it Works

Principle of operation is this. The target face is backed by two wire gauze panels. The first wire gauze panel is divided in a similar pattern to the target face, each portion being separate from its neighbours and insulated from the rear wire gauze disc by a further intermediate wooden disc, which also forms the backboard of the target itself.

The gauze segments are then wired up to a battery and lamp circuit, so when a dart penetrates both the front or 'recording' gauze and the rear gauze, the metal shaft of the dart actually completes the electrical circuit for that particular signal lamp which, therefore, lights up. In the case of a 'bull' score, the electric bell circuit is completed.

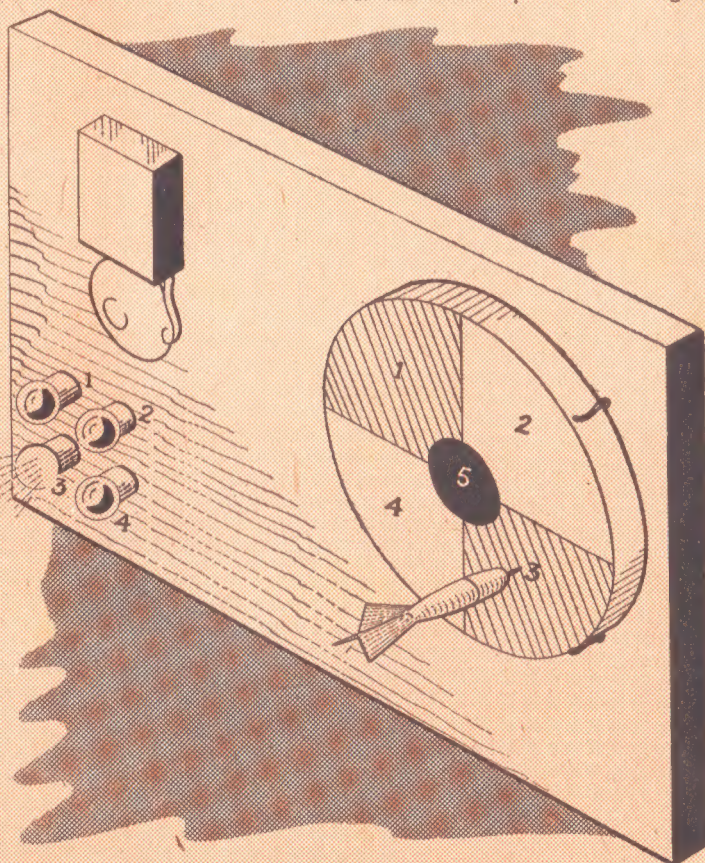
Target Components

Components of the target are shown in Fig. 1. These consist of a target face marked off into four equal sectors, with a circular bull ring. Diameter of the target is 9ins. and that of the bull ring

1½ins. These dimensions are purely suggestions and can be varied, as required.

The five recording gauze panels are cemented to the rear of the target face, these being cut to have ¼in. clearance between adjacent pieces (see Fig. 2). Backing this is a further 9in. diameter disc of soft wood, and finally cemented to the rear, a 9in. disc of wire gauze. In section the target assemblies as in Fig. 3.

For the wooden parts of the target,



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balsa is specified as being a soft wood, readily obtainable and one which does not easily split. The wooden discs must be soft to allow the dart to penetrate through to the rear gauze, otherwise the electrical circuit will not be completed.

finally assembled and cemented together. These wires must be soldered to the gauze, the wires from the sector-shaped divisions passing along the outside of the completed target to the rear, whilst the bull lead passes through a hole in the centre of the backboard and the rear wire gauze disc. All wires should be insulated and care taken to ensure that no part of the circuit is shorted out.

The lampholders, bell and target can be assembled on any suitable backboard. In

Checking Faults

Failure of any of the circuits to work can be quickly checked. Provided the dart point protrudes through the rear gauze disc the target circuit should be complete, when the wiring to the bulb and the bulb itself should be checked. There will be certain 'dead' spots on the target where no score will be recorded.

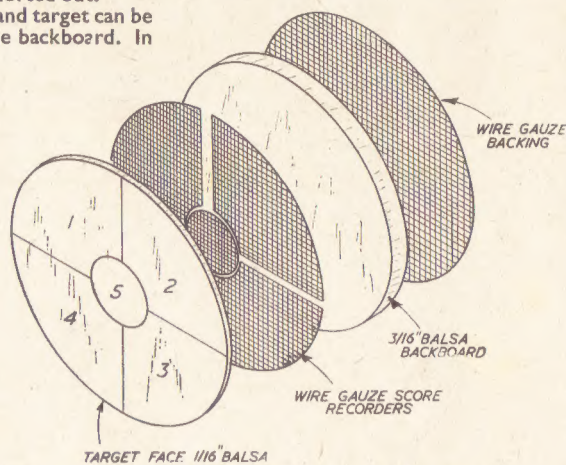
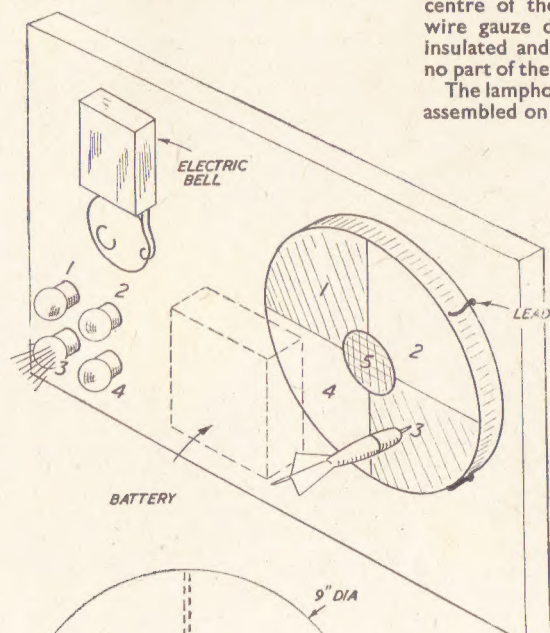


Fig. 1—The target components

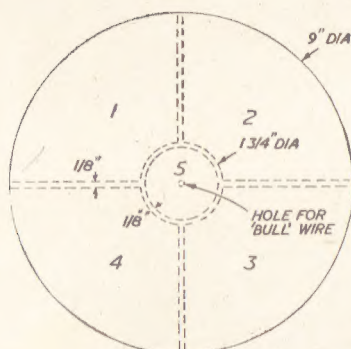


Fig. 2—Target layout

Soft balsa is ideal in this respect. Hard balsa, however, is like most other harder woods; it will split fairly readily.

Cork would, of course, be an ideal material for the backboard, if obtainable, or even wallboard or similar material. Any of these should be available in 9in. widths. In the case of balsa sheet, this is usually sold in 3in. widths and three 9in. lengths will have to be cemented together to provide the required width for the target face and backboard discs.

The Wiring

The wiring diagram (Fig. 4) is important and must be followed carefully. All the wires should be soldered in place before the target components are

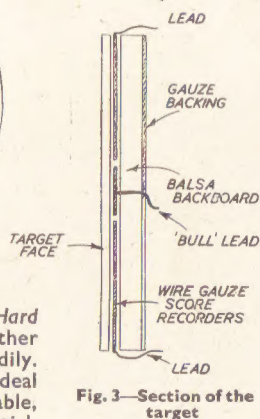


Fig. 3—Section of the target

wiring up the lampholders, note that the sockets of all the lampholders are connected together and thence to one side of the battery. The bulb contacts go to the respective score recording sectors.

No switch is shown in the diagram, but it would be advisable to put one in the battery lead, so that the target can be switched on or off as desired. If no switch is used, the battery must be disconnected each time after use.

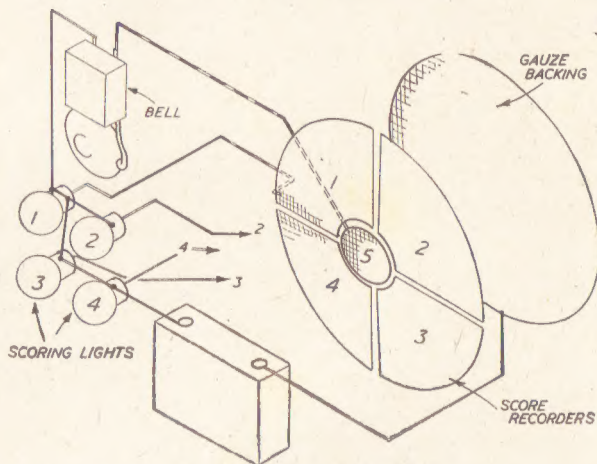


Fig. 4—Diagram of the wiring

These are on the lines, corresponding to the small spaces between adjacent score recorders.

You can, if you wish, reduce the chance of this happening to a minimum by working to only the barest clearance— $\frac{1}{32}$ in. being more than adequate, which is very much less than the width of the dart shaft. However, this needs very careful workmanship to avoid shorting out adjacent recording panels. (279)

HOBBIES BRANCHES —

LONDON
78a New Oxford Street, W.C.1
87 Old Broad Street, E.C.2
117 Walworth Road, S.E.17

GLASGOW
326 Argyle Street

MANCHESTER
10 Piccadilly
BIRMINGHAM
14 Bull Ring
SHEFFIELD
4 St. Paul's Parade

LEEDS
10 Queen Victoria Street
HULL
10 Paragon Square
SOUTHAMPTON
25 Bernard Street
BRISTOL
30 Narrow Wine Street

A simple novel mechanical piece of amusement PECKING CHICKS TOY

A YOUNGSTER would find much amusement in this type of pull-along. When drawn by a string, the pair of chicks peck away busily. It is quite easy to make and would be an acceptable Christmas gift for a child.

The body parts are shown grouped together in Fig. 1. The pecking board (H) can be cut from $\frac{3}{8}$ in. deal. Run a line along the middle and on this bore two pairs of $\frac{1}{4}$ in. holes, just $\frac{1}{4}$ in. apart, for the chicks to be fixed in. About $\frac{1}{4}$ in. in front of these, and between them, cut $\frac{1}{4}$ in. by $\frac{1}{2}$ in. slots for the operating cords. In the centre of the board, where shown, cut another $\frac{1}{4}$ in. by $\frac{1}{2}$ in. slot for part (D) to fit in.

Platform Parts

The sides of the body (B) are also cut from $\frac{3}{8}$ in. deal. At the spots indicated bore $\frac{3}{8}$ in. holes through for the axles of the wheels. Now glue and nail the sides to the board. Cut part (D) from $\frac{1}{4}$ in. fretwood, and make the tenon at the top to fit the central slot in the pecking board. Where shown make a small hole with a bradawl.

The part can now be glued in position and should point downwards, as shown by the dotted outline on (A). A rocker (C) is carefully cut from $\frac{1}{4}$ in. fretwood to the shape shown in the drawing. Drill a small hole near the centre, and at the spots indicated, right and left of this, partly drive in $\frac{3}{8}$ in. round-headed brass

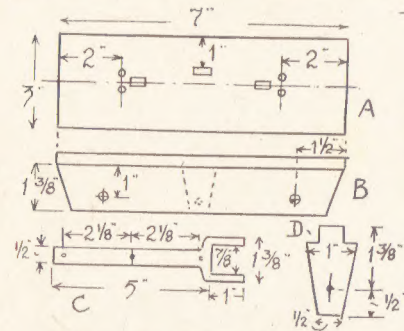


Fig. 1—The main platform parts

screws. Fit the rocker with a $\frac{1}{4}$ in. screw through its central hole to part (D) and see it can swing up and down freely.

Wheels

A pair of 2 in. wood wheels will be needed. These can be cut from fretwood or bought ready-made as preferred. Bore them centrally $\frac{3}{8}$ in. The axle is a length of $\frac{3}{8}$ in. round wood rod, cut long enough for the wheels to fit on when the axles are in place. These items are shown in Fig. 2.

To operate the rocker, a cam is cut from $\frac{1}{4}$ in. wheel, as at (F). Describe the $\frac{3}{8}$ in. circle first, and then at a centre, $\frac{1}{8}$ in. from one side, bore a $\frac{3}{8}$ in. hole to fit the axle.

The cam should be glued to the axle, not at the centre but with one face side touching it. It will be best here to glue one wheel on the axle first. Then push through the bearing holes, threading the cam on. Apply the glue to the spot on the axle where the cam is to come, and push the cam in place.

The second wheel can then be glued on. A thin fretwork nail might be driven through the cam into the axle to prevent it loosening at all, if it is thought that the glue is not holding it too well. Fix the second pair of wheels on to finish this part of the job.

The Chicks

When the glue is hard, draw the body along and if all is O.K., the rocker will swing quite freely. Now mark out and cut the parts forming the pecking

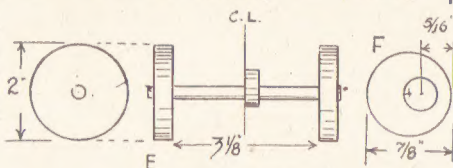


Fig. 2—Wheels and axle fitting

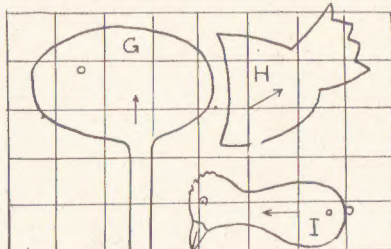
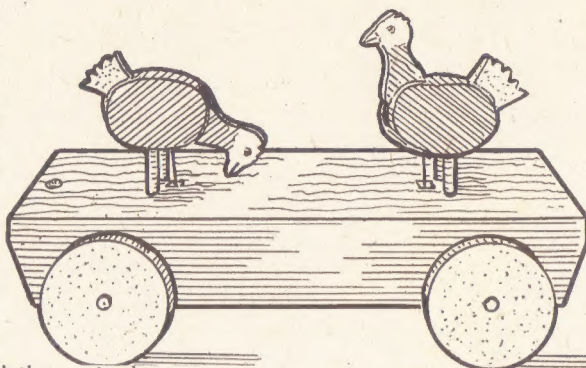


Fig. 3—Outline of chicks

chicks. These are drawn over $\frac{1}{4}$ in. squares. Copy them full size and trace through carbon paper on to $\frac{1}{4}$ in. fretwood, the arrows showing the direction of the grain of the wood. Cut two each of parts (H and I) and four of parts (G). Glue parts (H) between two of (G), leaving a gap between for the head and neck to swing in.

Heads to Move

Small holes are bored in (G) where shown, for the pivot nails on which the heads swing. The heads (I) are thoroughly glasspapered to thin the wood enough to ensure an easy fit between the sides (G). A pivot hole, an easy fit for the nail, is bored, where



indicated, and in the edge of the wood, near this, a tiny wire hook is fixed to which the connecting cords can be tied.

A pin makes quite a good hook. Drive in, and be careful the pin does not enter the pivot hole, cut off to $\frac{3}{8}$ in. long and bend this to an eye. Now pivot the head in with a thin wire nail.

It must be a loose enough fit here to drop down off its own weight, if the toy is to work satisfactorily. Tie the connecting cords on, round the legs a bit, just enough to fit the holes in the pecking board, and glue the chicks in place.

Method of Fitting

Drop the cords through the slots in the board and tie the ends to the screw heads in rocker (C). A method is necessary here. Turn the wheels until the forward end of the rocker is up, then tie the cord of the chick above to its screw head. Turn the wheels until the rocker is down and the rear end up, and tie the cord of the second chick. All should now work smoothly. A suitable hole is bored in the front of the pecking board for attaching the drawing cord.

Finish the toy in suitable colours. For making this article the following Hobbies panels of wood are required—one of L.D.6 and one G.4, with the wood for wheels, if home-made, extra.

Wood Like Ivory

TAKE $\frac{1}{2}$ oz. of isinglass, boil gently in $\frac{1}{2}$ pt. of water till dissolved, then strain it, and add flake white powder until the mixture becomes white and of the consistency of cream. Give the box or ornament three or four coats of the solution, letting each coat dry before the other is applied, and polish with a clean cotton duster. A few grains of carmine or chrome yellow will produce a slightly pink or amber tint.

Now is the time to make your preparations for XMAS DECORATIONS

CHRISTMAS decorations are always expensive, as they have to carry a heavy purchase tax of 100 per cent. There are many ideas you can make, with just a little imagination. Do not overlook the use of the coloured tissue paper on sale at model shops for covering model aeroplanes.

Most of the central decorations should be concentrated over the fireplace, but with all due precaution against fire. In the picture is shown a large cut-out of Father Christmas which can be made in wood or cardboard. Tall ornamental candles in vivid colours are now available and these can be set in four or six green apples cut in the centre.

A Set Piece

Make a centre set-piece by working out a wire frame in the shape of a star (see Fig. 1) always popular at Christmas. Criss-cross the shape with thinner wire, as shown, and then you can fit in a good layer of outdoor evergreen or furze. Touch off the edges with cotton wool and again a circle in the centre of cotton wool. Glitter powder and a little paste on the cotton wool will also add to the realism.

For the centre you need the largest silver ball you can find. If you have the smaller coloured glistening balls, then set these out on the points.

Thin wires stretched from each picture rail will enable you to hang down all sorts of smaller and simply-made ornaments. This system also helps you to keep the decorations up and out of the way of the heads of the company.

'Snow' and Holly

Roll balls of cotton wool and into these you can stick small sprigs of holly or berries in their natural colours or painted in art enamels of bronze, gold, red, yellow or silver. Note the design set out by graduated lengths in front of the fireplace. Some rooms look nicer decorated up to the fireplace, because this takes the decorations away from the centre room light and does not obliterate it so much.

Cotton wool is expensive but if you intend to go in for quite a few snow scenes, you can make this up cheaper by

Wire Straightening

THE following is a very successful method of straightening wire. Pass the wire round the handle of your vice or other round object and pulling the wire tight, work it to and fro, and it is only a matter of seconds before all the kinks are out.

getting a 1/- roll of white crêpe paper. Cut this into three sections across the grain. Force it on to a broom handle, so that it creeps up to the broom head. When you take it off it will be really wavy and just like heaped snow. Dabs of paste and glitter wax or powder will set the effects off.

Silver stars by the hundred can be cut from 1yd. of silver foil. Make three templates in different sizes.

If you do not go in for the more expensive garlands, then try cutting up strips of crêpe paper and twisting before fixing. Four bright shades will effect wonders and cost only 4/-.

One great attraction can be the real snow tree. If you are lucky to have a small tree, take this out in the garden and mix up some thin whitewash. Spray the tree and the effects will amaze all your friends.

Dinner table centre-piece should be the crowning effort. Cover a flower pot with crêpe, and make a centre stem of dowel rod or cane. Set a bright globe at the top. With a couple of packets of drinking straws you can wire these on, as shown in Fig. 2, and before doing this, dip them in various colours of enamels. Sealing wax blobs on the ends will add to this decoration. The tree is now ready for the icicle strip which will hang conveniently over the straws. This tree will also be strong enough to hang small gifts on in brightly coloured packets.

If you have a circular mirror or a silver tray, set this underneath with a little mound of cotton wool around the pot. Ring the edge round with cotton wool, berries and other suitable materials. The tiny figures shown (at Fig. 3) can be cut out in fretwood and set on small dummy sledges. A set of figures can be found in any toy book. If you can get the candle holders these will look well on each figure.

Simple Decorations

Do not overlook the use of brightly coloured fir cones as tree decorations, as they live any tree up and cost so little and look effective when used with other ornaments. Small horseshoes in silver card are always effective and much appreciated by all.

Sprigs of all sorts of outdoor ever-

greens can be used and you can frost them over with powdered washing soda. To do this, brush a little liquid glue or paste lightly over the foliage and then dust over with the soda. Shake the foliage out of doors to remove surplus. Oddments of ribbon, coloured wool, ornamental tie-up string can all be used, and in fact any colourful scraps should be used. Cords used in piping needlework can be painted in silver and are most effective.

Place names on the table will be

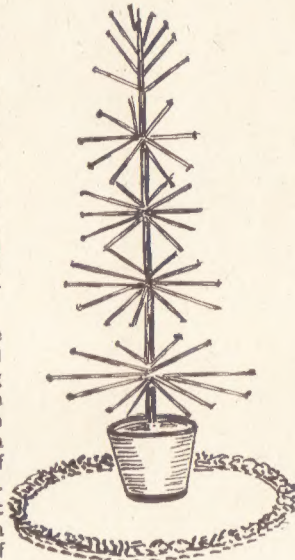


Fig. 2—A table centre piece



Fig. 1—An attractive star



Fig. 3—Another novelty

another method of making the place gay. Collect some cotton reels and paint in bright shades. Just a little card can be set up in each together with a sprig of holly. Gum the top and sprinkle with glitter powder. If you have golden tinsel thread, then tie the names on with this.

Powder and Pictures

There are many substitutes and one may not have thought of Epsom salts as a glitter powder. This can be applied with paste.

Cut-outs from any toy book make ideal novel decorations and they are so well coloured and designed that people will be amazed at the originality of your schemes. Why not make a set in fretwood and then give them away to the children afterwards.

Save all the small cream cartons. Paint in bright shades. Get some cones and set a wire in the centre. Tip the cone ends with gold, silver and red. Set them in the little pots. With these ideas you should spend little, create something novel and enjoy the work all through.

(316)

A simple and effective method of arranging a STAGE LIGHT DIMMER

WE are now right in the time of amateur dramatics, school concerts and the like, and it generally falls to the lot of the handyman to wire up the footlights and arrange other illuminations on the stage. In doing this the need often crops up for some sort of apparatus that will allow of the lamps to be faded out slowly and equally slowly brought back to a state of full intensity. Indeed, some of the 'ghosty-ghosty' plays greatly favoured by amateur dramatic societies depend entirely for certain effects on dimming.

The apparatus to produce 'fading' is not hard to make and is officially known as a dimmer. There are several types, but the simplest is the 'liquid resistance' dimmer in which the current is passed through a vessel containing water to which salt or soda has been added, the amount of resistance depending on how far through the solution the current has to travel.

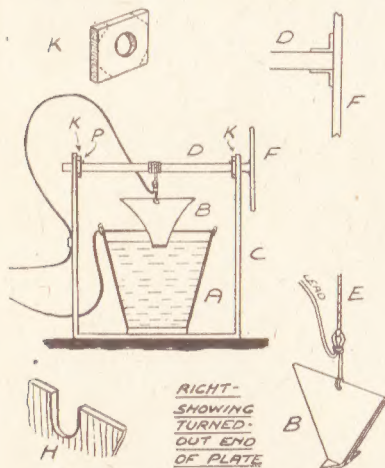


Fig. 1—Section and detail of parts

Fig. 1 shows the arrangement of a dimmer and the parts required for use with current up to 5 amps. The part (A) is an ordinary household metal bucket and (B) a triangle of thick tin made up of a diamond shape bent over about its shorter diagonal.

At the bottom, the points of the triangle are turned out to form a foot and a good area of contact when the plate is right at the bottom of the bucket and full current is flowing.

Better Results

Better results are obtained if the sides are curved inwards and the triangle should be so sized that its top corners touch the bucket side when the foot is on the bottom. The shape is best secured by experimenting with a sheet of card which can be snipped and trimmed till everything is right.

The piece (C) is an ordinary tea chest

or other box in which the bucket goes. This acts as a support for the spindle (D) and covers the whole apparatus so the operator is right away from anything that may be 'alive'.

To assemble, put the bucket in the box and breaking a lead from the lights, take one of the loose ends so-left through a hole in the box. Either attach the end to the handle loop on the bucket or, stripping a length of insulation, wrap it right round the bucket at the point where the slope of the side ceases at the bottom.

A bolt through the metal makes a better terminal still, but rather mars the container for household work later on. In any case, if the wire is quite tight round the bucket or well fastened to the handle loop, good results will be had. There must, however, be no question of a loop shaking down or a handle contact becoming loose during a show, for all the lights depend on this joint for their current throughout.

Whatever the method used, carry the insulation as near to the point of contact as possible.

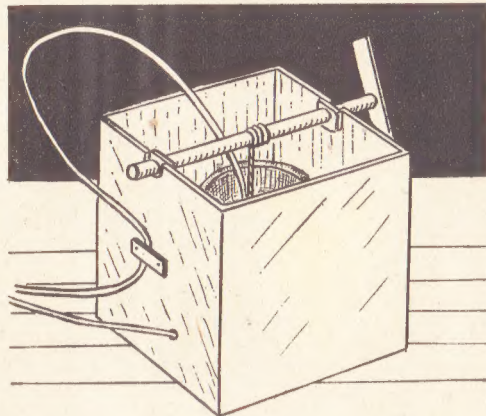
Top Spindle

Now fit the spindle on top. This is merely a length of round rodding—a discarded brush stave if straight will do, or a bit of old curtain pole. Two vertical channels are made in the top edge of the box as (H) opposite one another and the spindle is fitted with a single cross bar (F) at the end which, it will be found, protruding at both sides, enables one to impart an even turning action to the rod. If desired, of course, a simple handle could be fitted, but this really is not necessary. Fit also the wooden washers (K), held by the nails (P) to prevent the spindle slipping sideways.

Take the other end of the cable, break and fasten this to the central point of the metal triangle (B) and then suspend the triangle from the spindle by the length of cord (E). Wrap the cord, which should be thin and pliable, round the wood several times and attaching to the cable below as shown. If correctly adjusted it should be possible by rotating the spindle to lower the triangle right to the bottom of the bucket or conversely raise it to the top.

To fix the cord firmly to the spindle put several tacks through the flattened end. The danger of the wood suddenly starting to rotate idly in a loose circle of the cord must be entirely eliminated. Nothing can be left to chance.

To allow the cable to come down easily with the plate, it should be clipped to the side of the box as shown so a big easy loop is formed that will sink with



the weight without putting any drag on it.

The resistance solution can now be added. Fill the bucket with clean water, lower the weight till it touches the bottom and switch on. If all is in order, the lamps will burn at their full intensity as the current is complete.

How it Works

Draw the triangle to the top of the bucket and the lights go out. Now add the salt or soda which has the effect of reducing the resistance of the water. When the resistance has been reduced sufficiently, the lamps begin to glow very faintly and this is what is wanted—that the lamps shall be dimmed out at the top of the bucket.

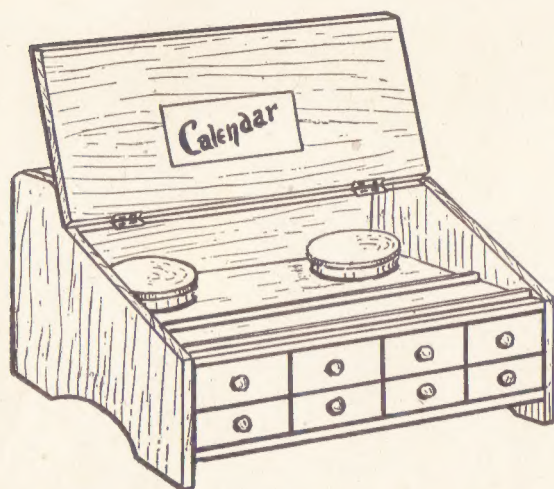
Now if the weight is lowered and more of the triangle is immersed, the point goes nearer to the bottom and the side to the bucket side, the lamps will burn with greater intensity.

Thus we have the control we want and our dimmer is completed. Incidentally, should you be working with D.C. and not A.C., it is better to introduce the dimmer into the negative cable—that is the one that is bringing the return current from the lamps.

Removing Rust

MOST readers find it rather difficult to remove rust from their woodwork tools. Here is a way of doing it quite easily. First of all obtain an old scrubbing brush, a small amount of sand, and a drop of water. Dip the brush in the water and sprinkle the sand on the article you wish to clean, such as a saw, chisel, etc. Then scrub it with the brush for a few minutes and after washing and drying, it will look as good as new.

Matchboxes and a little wood used to make a useful BUREAU INKSTAND



PEOPLE who have a lot of writing and other business to attend to and especially club secretaries, will find the little inkstand described on this page very useful. Not only does it hold the containers for black and red ink, but the many small drawers are ideal for holding all the accessories that help to make the job so much easier.

It is nice to be able to lay your hands on paper clips, rubber bands, pen nibs, india rubber, stamps, etc., without having to hunt all over the place for them. To say nothing of the time saved.

Matchbox Drawers

The stand illustrated is made of eight matchbox drawers, but it is possible to add many more to suit your own individual requirements. The measurements quoted, therefore, are only approximate; also the sizes of the matchboxes and the ink containers may vary a little. It would be best to first collect these materials and then to build the inkstand around them.

If the matchboxes are all the same make you will be sure that they are alike in size, and also see that they are quite sound and that the 'drawers' slide easily.

Glue together the eight boxes in two rows as shown. Or if you decide to make a larger set you may make it either ten boxes in two rows or twelve boxes in three rows. When the glue has set, work can start on the actual construction.

All the wood used in the model bureau is $\frac{1}{2}$ in. thick and it can be any kind you like, a hardwood such as oak, walnut or mahogany would probably look best, unless you decide to paint or enamel the finished article. In that case you could even use $\frac{1}{2}$ in. plywood.

Cut two pieces of wood 6 ins. long and $4\frac{1}{2}$ ins. wide to form the top and bottom of the matchbox drawers. Before fixing in position the top piece must have two circles cut in it to take the ink containers. The smallest size potted meat jars have been used for this purpose: they are 2 ins. high and the top measures $1\frac{1}{2}$ ins. diameter. A neat metal cap with a rubber band inside fits tightly over the top and keeps the ink from evaporating.

When using only two rows of matchboxes the jars rest on the bottom board, but if you decide

to have three rows, an extra piece of wood will have to be fitted for the jars to rest on. A matchbox glued at each end will give the correct height for this.

Set Back

When gluing the matchboxes between these two boards, set the boxes back about $\frac{1}{8}$ in. from the front. The reason for this is that all the drawers are faced with a thin piece of wood, which

shape shown in the side view for the sides of the case— $4\frac{1}{2}$ ins. wide and $5\frac{1}{2}$ ins. long. These pieces project $\frac{1}{4}$ in. above the top of the actual cabinet so as to form a support for the lid when opened. If this is sloped slightly the lid will lean back at the correct angle to display the calendar pad fixed on the inside.

The Back

The size of the back is 6 ins. long and $4\frac{1}{2}$ ins. wide and this can be cut, together with the top of the stand which is 6 ins. long and 1 in. wide.

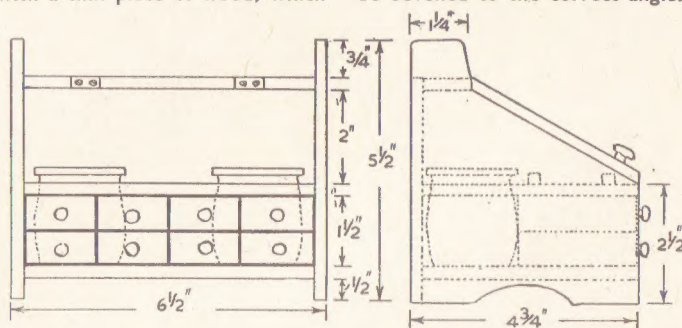
Glue on the two sides, back and top—small panel pins can be used to strengthen the work if thought necessary. These should be punched in slightly and the holes filled in and made smooth.

It may be necessary to put the ink jars in position before the top bar of the case is glued on; this will depend on the actual size and shape of the jar you are using for the purpose.

In front of the jars are two strips of wood, which form a container for pens and pencils. They are made from $\frac{1}{2}$ in. strips of square wood and have the top edges slightly rounded.

Lid Portion

The lid is cut $6\frac{1}{2}$ ins. long and $4\frac{1}{2}$ ins. wide which will allow the hinge edge to be bevelled to the correct angle. Two



A front and side view showing parts and useful dimensions

not only improves the appearance but helps to strengthen the drawers, and also keeps the drawers from being pushed in too far.

Knobbed Fronts

The drawers can be finished off at this stage by fitting the fronts and when dry, the knobs can be fitted. There are many ways of doing this—small screw eyes, round-headed screws, or shoe buttons can be used, or even the metal rings used for passe partout framing.

The more modern way is to glue on a narrow strip of wood either plain or shaped to form a finger grip.

Next cut two pieces of wood to the

miniature hinges are slightly sunk into both edges and screwed carefully in place. The addition of a knob to the lid completes the construction of the stand.

After glasspapering the woodwork, the stand can be finished in any style—french polished in the natural state, or varnished and stained, or the entire surface can be painted or enamelled. The metal tops of the ink jars can be enamelled to match, or can be made black and red to distinguish the two inks.

The insides of the drawers should be lined with white or tinted paper, using either a good paste or thin glue. This makes them not only tidy but strengthens the cases considerably.

(275)

Battery, glass paste jar, flex and switch to make A LAVATORY LIGHT

USUALLY the domestic lavatory is not provided with any illuminant, and so a light of some kind is really necessary at night time. As a brilliant one is not required, that from a torch bulb and battery will serve very well. The arrangement depicted provides the lamp as a separate article, so that it can be fitted exactly where considered most convenient, while the battery box is provided with a switch and is fixed against the door, handy when the latter is opened.

The battery box is made of $\frac{1}{2}$ in. fretwood, and is shown in a front view (minus cover) and a side section in Fig. 1. Note the interior dimension; these should accommodate a 3 volt cycle lamp battery, but could be amended to suit any other battery chosen. Make the four sides of the box first, gluing and nailing them together, then cut the back and glue the box to it, strengthening the joints with a few small screws through the back.

Cover Piece

Strips of the wood $\frac{1}{2}$ in. narrower than the sides of the box are nailed across inside, one at the bottom and one $\frac{3}{4}$ in. down from the top. A cover is now cut of a size to fit the box; it rests upon the two strips mentioned, and is kept in place by a pair of small metal clips, as shown in the general view. The battery should now be tried in place, and should fit in comfortably when the cover is fitted on.

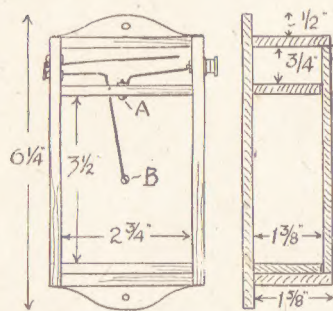
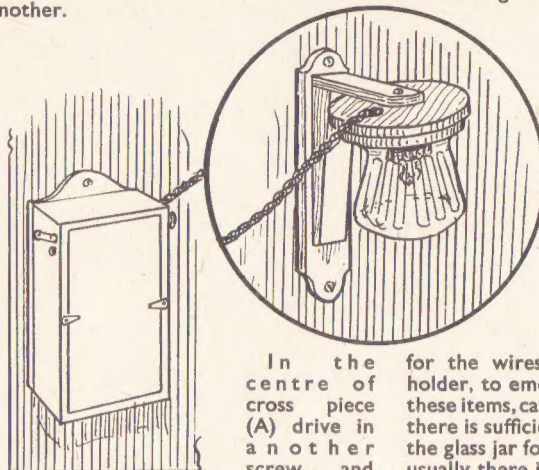


Fig. 1—Front view and section

For the electrical connections, first fit in the right hand side, near the top, a pair of brass terminals. Opposite these, on the left hand side, fit a small switch. Quite a good one can be made as follows. Cut a springy strip of brass, $\frac{1}{4}$ in. wide and $1\frac{1}{2}$ ins. long, punch a hole through near one end, and file away the burr.

On both sides of the hole place a small brass washer, and drive a screw through the lot into the side of the box, at about $\frac{1}{2}$ in. in from the rear edge. Opposite this, drive in a pair of screws, centres $\frac{1}{2}$ in. apart. The screws should be $\frac{1}{2}$ in. round-headed brass ones and will protrude through the wood to the

inside of the box. The switch arm should be free enough to press firmly on these screw heads as it is shifted from one to another.



one also in the centre of the back of the box, as at (B). The battery, when in position, should contact these screws satisfactorily and a test should be carried out to see they do.

For the electrical connections, run a length of D.C.C. wire from screw (B) to one of the studs of the switch. A second length of the wire is soldered to screw point (A) and is then connected to one of the terminals. A third length of the wire goes from the second terminal to the screw point of the switch arm, to which it is soldered.

This finishes the battery box, which can then be nailed to the wall in the most handy place against the door for the left hand to feel, and operate the switch, when the door is opened.

Lamp Holder

For the lamp, a case is made from the $\frac{1}{2}$ in. fretwood. Parts for this are shown in diagram Fig. 2. Cut the back (C) and shape up. At the spot shown, saw out a $\frac{1}{4}$ in. by $\frac{3}{8}$ in. mortise slot for the horizontal arm (D) to fit in. This arm is cut out to the length given, plus $\frac{1}{4}$ in. extra for the tenon at its rear end, which should be cut, of course, to suit the mortise slot.

A solid wood bracket piece (E) is now cut from $\frac{1}{2}$ in. thick wood. It is $\frac{3}{4}$ in. wide, and is planed to a downward taper, as shown. Glue the arm (D) to its back piece, and the bracket to the same, where shown by the dotted outline, to support it.

Writing on Wood

WHEN writing on wood in ink, this runs and blobs. To prevent this rub the wood with powdered resin.

The lamp holder, Fig. 3, is a simple affair. Cut a disc of the fretwood to the diameter given, and a ring of the same thickness wood, $\frac{1}{4}$ in. less all round, with a hole in the centre just the right size to admit the rim of one of those small jars of meat paste. These make excellent lamp shades. The jar is held in position by three small metal clips, as shown in the drawing.

A small plastic or metal lamp holder is screwed inside to the disc, and a hole bored in the latter, at one side, for the wires, connected to the lamp holder, to emerge from. In reference to these items, care must be taken to see that there is sufficient room in the interior of the glass jar for the lamp holder to fit in, usually there is, but test first, as amendments in size all round can easily be made beforehand, but not afterwards. Fix the disc with a single screw to the horizontal arm (D). All being satisfactory, enamel the lamp case any colour preferred, fit in the lamp, etc., and nail the whole to the wall of the lavatory, in any convenient spot.

Lamp and Battery

Now carry the wire connections from the lamp to the terminals on the battery box, and light up for a trial. See the wires do not dangle but are fixed to the wall with small staples in security. A

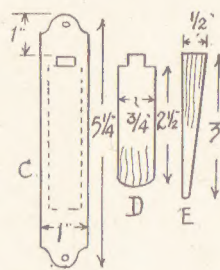


Fig. 2—Parts of the lamp bracket

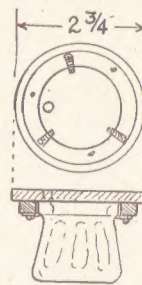


Fig. 3—The globe holder

2-5 bulb is the right kind to employ for a battery of the cycle lamp kind. With a $4\frac{1}{2}$ volt battery, a 3-5 volt lamp could be installed, but would not last so long unless the battery is much larger than the usual torch pattern.

For making this article a 7 ins. by 14 ins. panel of $\frac{1}{2}$ in. wood will be required. Measure out the parts carefully, as there will be no surplus, in fact, it may be necessary to cut one of the lamp holder discs from a spare scrap of wood already in possession. Of course, an extra panel 4 ins. by 9 ins. of the wood will obviate this.

A new chemistry series deals first with home-made CHEMICAL APPARATUS

WITHOUT doubt the most expensive item in experimental chemistry is the purchase and replacement of apparatus. However, it is possible to cut down this cost substantially by adapting everyday articles, and it is hoped the following substitutes will leave more money for chemicals in the home chemist's pocket. Furthermore, even if you have already any of the pieces of glass apparatus dealt with, it is better to use the substitute whenever possible, so as to lessen the average risk of breakage.

Beakers

For cold or lukewarm liquids use jam jars for large quantities and unribbed fish paste jars for small quantities. As these have no spout, when pouring from them, hold a glass rod against the rim. The liquid will run down it without dribbling. Jam jars even have an advantage over ordinary beakers in that the shoulder will hold back a precipitate when you are decanting the wash waters.

Flasks

For cold liquids clear glass bottles may be used. Though these cannot be heated on wire gauze or sandbath, they are satisfactory in or on water or oil baths if placed in the bath before the heating is

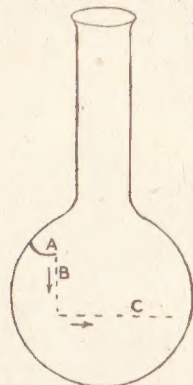


Fig. 1—An evaporating basin from a cracked flask

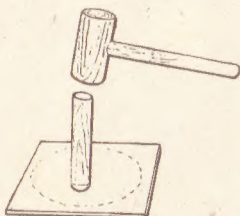


Fig. 2—Making a lead evaporating basin



led right round the flask until the bottom is severed.

If the crack is in the position (A) in Fig. 1, it must be extended downward via the vertical dotted line (B) to the dotted line (C). Once at (C) keep reheating the rod in the bunsen or spirit lamp flame and placing it about $\frac{1}{2}$ in. beyond the end of the crack.

As the crack extends, turn the flask and the crack will keep growing until the rod cools, when it must be reheated. The last $\frac{1}{2}$ in. usually severs itself by the movement of the flask in the hand. You can use the basin so made for all evaporations, but not for ignitions.

For quick evaporation of non-acid solutions a lead basin can be made easily by beating out a square of sheet lead, as shown in Fig. 2. Place a 6 in. square of the metal on firm packed earth or on a grass plot, having first scribed a circle on the lead. With a round ended piece of broom handle proceed to beat a hollow. When deep enough, trim the basin edges with metal shears or heavy scissors and bend a spout with pliers. Then rub down the rim flush on a sandstone flag.

Crucibles

A hard glass test tube serves well, a loose plug of woolly asbestos being used for a 'lid' when one is needed. Where the chemical to be heated does not attack iron a suitable piece of tube of this metal with one end closed may be used. If a piece with one end closed is not handy, heat

one end flat; you can use this where heating does not produce fusion.

Tripods

Take three 18 in. lengths of stout iron wire. Bend up each piece 7 ins. at each end at right angles to form the legs. Now bind the legs in pairs with fine wire, as shown in Fig. 3, and curve out the feet to give steadiness. If the frame wire is not stout enough to prevent a little splaying of the feet, this may be remedied by running a length of thin wire all round from foot to foot and drawing taut.

Pipeclay Triangles

Thread three 2 in. lengths of broken clay pipe stem or narrow iron, brass or copper tube with 5 in. lengths of thin iron wire and twist the wire ends together with pliers, as in Fig. 4.

Test Tube Brushes

Cut a 2 in. long by $\frac{1}{2}$ in. wide strip of sponge (or several thicknesses of absorbent cloth) and double it over a thin stick 8 ins. long. Now bind down the free ends with cotton thread. This swab, if of sponge, cleans better than a brush.

Water Baths

An enamel pint mug or a small saucepan is a good substitute. If the top is too broad for any piece of apparatus, take a press lid from a tin and cut a circular hole in the middle. The dia-

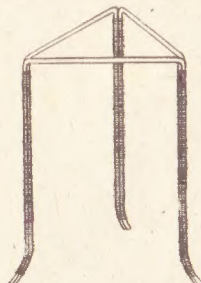


Fig. 3—A tripod from iron wire

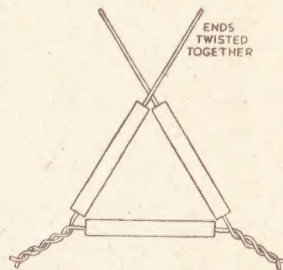


Fig. 4—An easily-made pipeclay triangle

started. It is sudden heat which cracks thick glass, not gradual heat. The writer has seen bottles used thus in some of Britain's biggest industrial laboratories.

Evaporating Basins

Where a quick evaporation is not needed, uncoloured saucers serve very well in the domestic oven or on the water bath. Cracked flasks and retorts can be easily converted into evaporating basins by the following method if the crack does not run into the bottom. First dry the flask. The method relies on the fact that a hot glass rod held a little past the end of a crack causes it to extend. By repeated heating and application of the rod, the crack may be

a piece of thin tube such as a length sawn from a bicycle handlebar and hammer

Broom Handle Uses

THERE are many uses for broom handles and here are some. As a towel holder (that is a roller), handles for tools, rasps, trowels, etc.; cricket stumps, too, and checkers are never to be forgotten. If you are a carver, you can make fancy door knobs, half moulding. Useful in wardrobes, too, for hanging clothes hangers. For the house ladder they make good rungs.

meter of the lid must be such that its flanges rest on the rim of the mug or saucepan. A series of these lids graded in diameter and fitted concentrically enable any size of flask or evaporating basin to be used on the bath.

Spatulas

A whittled piece of wood, a strip cut from aluminium scrap, a length of thick copper wire beaten flat at one end or a spoon handle will serve.

Porous Tiles

Scrubbed porous bricks or old house tiles are splendid and drain wet crystals quickly. After each use, soak them in several changes of water before drying in a hot oven.

(283)

(To be continued)

MATTERS of INTEREST



Extension Only

I HAVE enclosed a 6½ in. speaker in a cabinet for use as an extension from a 5-valve Mullard Sp. het. A.C., and I would like to be able to cut out the reproduction to the receiver's speaker so that only the extension is playing. (W.J.C.—Belfast).

A SWITCH can easily be fitted to silence the receiver speaker while leaving the extension speaker operating. Locate the leads in the receiver which go from the secondary of the speaker transformer to the speech-coil of the speaker itself; cut one of these and connect an on/off switch in circuit. Volume control at the extension point may be obtained by using a 10,000 ohm potentiometer. Connect outside tags of this to the two extension wires from receiver. Connect extension speaker to slider of potentiometer and one tag, when control of volume will be possible with a high-impedance extension speaker. If you are using a low-impedance extension speaker (moving-coil without transformer) this method is not suitable. Instead, use a wire-wound resistor of about 10 ohms maximum, connected in one extension lead. If available, an old filament rheostat is suitable.

Microphone Repair

IS it possible to repair a microphone in which some of the carbon granules have been lost? (P.M.—Darlington).

IF many of the granules have not been lost, the microphone will probably work satisfactorily if in such a position that the remaining granules can make contact with the internal electrodes. For a repair, it would be necessary to fill almost completely with new granules, and these are likely to be difficult to obtain. It should not be overlooked that some free space is always left in the section holding the granules.

Electric Poker Work.

I WISH to make an electric poker set for burnt wood engraving. I know you have to cut down the voltage through a transformer, but what voltage to cut down to, and what is amperage required? (J.M.W.—Bristol).

IN its main essentials, an electric poker for wood burning is the same as a small electric soldering iron. It is not essential to use a transformer, but where this is done, two or three heats can be provided by suitable tappings on the secondary side of the transformer. There is no rule in the matter, but a step-down transformer giving output voltages of about 40 to 60 volts should be

suitable. The wattage required is more or less conditioned by the desired temperature of the bit, but something about 25 to 40 watts should be ample, hence an amperage of ½ to ¾ amps would be appropriate. The resistance of the heating element must be adjusted to suit, and should be such that the heating element works at as low or dull a red heat as possible, or even at a 'black' heat. A resistance of about 60 to 80 ohms would probably be suitable.

Be most careful with insulation; use mica for all hot points, and provide an efficient third wire or earth wire, properly connected to an efficient earth, as a safeguard should a short circuit occur in the electric poker.

Cement Fixing

IS there a waterproof hard-setting cement I can use to make a satisfactory finish between a glazed-steel type of bath and hard-board? (D.W.—Gateshead).

NO cement can make a permanent bond between glazed metal and hard-board. Satisfactory results can generally be achieved by the use of Alabastine or plastic wood. The latter will adhere firmly to the hard-board. The plastic wood can be finished with any cellulose paint or synthetic finish.

The Crinoline Lady Table Mat Holder

NOW is the time for making those presents for Christmas, gifts to help swell the annual bazaar stalls, for personal presents, or to be sold to friends who themselves have a gift problem. These table mats will also find a ready sale for a nominal sum of a few shillings to help defray the cost of materials for some of those more expensive models that most of us always intend to tackle. Further to assist you a full size pattern of the lady is shown on page 157 of this issue.

Making in Quantities

If you intend making a number of these articles, you will find that you can save time and waste of materials by first copying each piece on to thin card with a tracing, and carbon paper. Then carefully cut these templates out with a sharp knife or scissors. Now all that you need to do is place the templates in the most economical position on wood, and quickly run a pencil round the edges.

The Mats

With this table mat design, the mats can be cut from sheet cork, rubber or waterproof plywood. Alternatively a set can be made from individual decorative mats that can be obtained at the cost of only a few shillings from a local department store. It is suggested that a set consists of one large mat, two medium size mats, and four small mats.

The holder for the mats is an attractively painted crinoline lady, with a base and back. The whole model consists of three pieces, which can be seen in the detail at Fig. 1.



The Base

The base should be cut from solid wood ½ in. thick and 2½ ins. long. The depth of this piece is controlled by the number of mats that it is intended to store in the holder. This can be judged by placing all the mats together and adding ½ in. to the total width, to ensure the mats can be stored in the holder without fitting too tightly.

The Back and Crinoline Figure

The crinoline figure and the back of the holder can be cut from the illustrated pattern on page 157, using ¾ in. or 1 in. plywood. Before assembling, the three pieces should be coloured with a stain applied with a pad of smooth cloth or cotton wool. Stain every edge and surface of each piece, with the exception of the front of the crinoline

(Continued on page 157)

Full size patterns are on page 157

There is nothing difficult in the operation of making RUSTIC ASH TRAYS

It is simple to buy perfectly well designed plastic ash trays but they often 'look cheap'. The lines of the mould in which the plastic was forced into shape can be seen or, perhaps, the only colour available is some prismatic shade totally out of keeping with your furnishing. In short the object lacks the appeal of a craft made ash tray, which can also be a useful present.

The ash tray shown is simple to make and may cost nothing if you can get or have the three components on hand. You will want a piece of tree just over

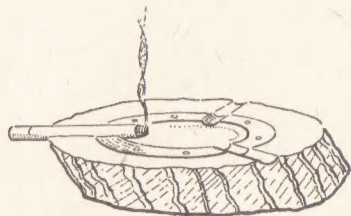


Fig. 1—A simple attractive holder

3ins. through from bark to bark. You can either get this from firewood or, if you are lucky, cut it from a tree branch whose bark you like.

Copper Sheeting

For one ash tray enough copper sheeting for a disc 3ins. in diameter will be required. You may find a scrap on some building site, as the material is used for roofing. It can be obtained from builders' merchants, who may let you have a small piece—plenty for your purpose. Lastly for each ash tray you will require half-a-dozen brass brads not more than $\frac{1}{4}$ in. long.

Saw through the piece of firewood or tree branch at about 45 degrees to get a slice 1in. thick, of the sort shown in Fig. 1. There is no reason why the slice should not be cut square if you require a symmetrical object. Glass-paper the wood well to bring out the end grain.

Beating Metal

Mark out a 3in. circle on a piece of your copper sheet and cut it out with a pair of tinsnips. If you have no suitable metal block for beating out the copper centre of the ash tray you will be able to make what you require from lead. Melt some lead on the stove in an empty 1in. deep polish tin about 3ins. in diameter. Beware of splashes, so lower in lead scrap gently with pliers or pincers. When the tin has been nearly filled, cut off the heat, skim off the litharge (lead oxide) with a scrap of wood, and leave the lead to solidify.

Use a round-headed hammer to beat a shallow depression about 1in. across in the lead block. Place the copper circle

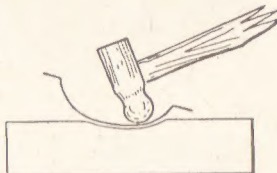


Fig. 2—Beating to shape

over this hole and gently tap away with the hammer, as shown in Fig. 2.

You will find it quite simple to make a regular circular depression about $\frac{1}{2}$ in. deep and extending to within $\frac{1}{4}$ in. of the edge of the copper, even though your lead block has only a comparatively

shallow hole. In fact a deep hole in the lead will lead into difficulties. On opposite sides of the copper it is now necessary to mark out the depressions which will hold lighted cigarettes. These are $\frac{3}{8}$ in. wide.

Place a piece of rounded iron bar on the edge of the lead block and tap with the hammer till a semi-circular channel is formed, as shown in Fig. 3. It may be necessary to cut away the edge of the tin first.

Cigarette Channels

Place the copper disc with its marked rim over the channel, and with the aid of the same metal bar and the hammer, tap until the cigarette channel has been formed. Once again the bar need not correspond with the diameter of the channel. Repeated taps will enable the channel to be widened with a thin bar. A quite serviceable channel can be made with a bar of larger diameter than $\frac{3}{8}$ in., such as the circular side of a cold chisel!

When another channel has been tapped opposite to the one finished, the ash tray centre is ready for fitting to its wooden base. Of course, three or even more channels can be indented at regular intervals round the copper rim if desired.

Mark out the site of the main ash depression on the wood base and with a small chisel, gouge or sharp knife, begin hollowing out the wood until the copper top is prevented from lying flush by the cigarette channels round the rim.

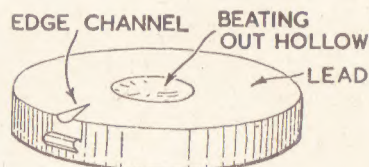


Fig. 3—The former base

With care cut corresponding cigarette channels on the wood at exactly the right places to make a good fit.

Varnished Wood

Mark out the places on the copper rim where you intend to put securing brads. Tap holes with a small steel nail or steel brad. Next give your wood base several coats of varnish. The bark especially will absorb plenty. If you have no varnish, wax polish will do quite well.

Drive home your brass securing pins with the copper in place and the job is ready for having a shine given to the metal with metal polish.

The ash trays can be varied in a number of ways—there is no need for a piece of virgin wood for a base for instance. Perhaps, carefully-made ash trays may help solve your Christmas present problem. (292)

An Instructive Panoramic Model

THIS interesting and attractive mechanical model was made by the boys of St. Michael's Secondary School, Chatham, and is a realistic replica showing how electricity is distributed from the power house to the consumer. Various sections were made to light up and work, and having completed their enjoyable construction work, the boys, as you see in the picture were able to press switches to prove the mechanical ability of the various parts. It proved a great attraction, naturally, whenever it is on exhibition.



(Reproduced by the courtesy of the Chatham Observer)



Some French Colonials

NO doubt a great many collectors of foreign stamps fight shy of the French Colonials, and there is a reason for this. Before the war anyone who answered an advertisement offering so many picturesque stamps free, would almost certainly have sent to him some of the low value stamps of the French Colonial issues.

Some of these are certainly very picturesque, and since in those days the lowest value of the French Colonial stamp was 1 centime, which meant that one hundred such stamps could be bought for a franc, you see why they were given away.

Interesting Points

Things are rather different now. You do not find such low values; in some cases the lowest is 10 centimes and sometimes it is considerably higher. Also there are certain difficulties, in importing stamps into this country.

It is rather a pity that there is such a prejudice against these stamps, as some of them have very interesting designs. Such as curious ways of obtaining a living or curious means of transport, with the occasional stamp showing the two connected.

For example, the 1927 postage due stamps of Cameroons give a picture of natives felling a mahogany tree—the way they have of obtaining a living. Then on the stamps of the French Equatorial

of the trunk would be useless when he had done the work.

The stamps of Dahomey show how well the natives can climb trees. A man seems to be able to walk up a tree rather than climb it. The secret is, of course, the support that he has, rather like the belt that the telegraph linesman has, so when at the top he can stay there and yet have both hands free to work.

During the 1914–1918 war the stamps of Dahomey were overprinted for use in Togo during the Anglo-French occupation. Then when the French stamps for this area appeared in 1922, they showed a picture of coconut trees 'Le Cocotier'.

From the Coconut

We must remember that the coconut tree is far more to the native than just supplying a fruit at which to shy sticks or balls at a fun fair. From the coconut they get coir which is made into sailcloth or cordage; copra which is the dried white kernel and which is exported to America and Europe for the oil which is obtained and used for margarine.

Then there is the desiccated coconut that gives the flavour to our coconut-ice; the white liquid which is in the nut is used by the natives to make a drink, and the hard shell makes a particularly valuable form of charcoal—the charcoal that is used in the making of gas masks comes from coconuts.

The second illustration comes from

The third illustration is to remind you of olden times. This stamp gives us a picture of a Carthaginian galley. Large galleys frequently had both sail and manpower, as is visible in this case. Note also another characteristic of this type of vessel—the decorated prow. This is what gave rise to the figureheads once fixed to the ship's prow underneath the bowsprit. Although now out of date some are preserved in museums.

This stamp is one of the high values of the 1906 set. On the lower values of the same set we have a picture of Hadrian's aqueduct. Those living in the north of England will probably know Hadrian's English ruin, the Hadrian's wall.

On the 1926 set from Tunis we have a third reminder of ancient days—the ruins of the Amphitheatre at El Djem. Those who have no copy of this stamp can get an excellent idea of the picture from a view of the ruins of the Colosseum at Rome.

A Mosque

The last illustration we give is of a stamp from the French Ivory Coast. Not many people would guess by looking at the picture what it is intended to be. At first sight they might even take it for some form of giant cactus but actually it is a picture of the Mosque at Bobo-Dioulasso.

As a contrast to these ruins of stone and brick the French Colonial stamps show us some very flexible buildings,



Fig. 1—Gaboon timber transport

Fig. 2—Guadeloupe sugar mill

Fig. 3—Carthaginian Galley

Fig. 4—Ivory Coast Mosque

Africa and also on those from Gaboon we see natives transporting these huge logs by making them into a raft. The illustration is sufficiently clear for you to see that the natives have built on the rafts cabins in which they live during the journey from forest to saw mill.

Tree Felling

If you have a stamp showing the tree felling, look carefully at it and see if you can decide why they cut the tree down such a height from the ground. As you know, in England when they cut down a tree they cut it as close to the ground as possible to prevent waste.

Well, the mahogany tree has very protruding roots and if the native cut as close as in England then he would have to do ever so much more work and the end

of the trunk would be useless when he had done the work. Guadeloupe. The stamp was issued in 1928 and shows a rather primitive form of sugar mill, rather like a large washing mangle. But instead of squeezing water out of clothes it squeezes the juice or molasses out of the sugar cane. In the 1947 set from Guadeloupe we have a picture of a native cutting the sugar cane, using a machette, and higher values of the same set show a native woman carrying pineapples.

Another vegetable product which comes to us on French Colonial stamps is the dates which are being gathered on the Tunis Parcel Post issues. On the higher values of the 1947 Martinique set and also on the postage due stamps of 1933 we see that in this French Colony we could do ourselves very well indeed on the various fruits which are produced.

tents, straw huts, and mud huts. First the straw hut—for these you have to look at the 1930 issue of postage due stamps from Tchad. These houses certainly look very curious. The mud houses which are shown on the lower values of the 1938 set from French Guinea appear to be very far from comfortable. They are not so high as those mentioned before and what light gets inside seems only to come through the roof.

Two pictures of the chief's hut are shown on the stamps of New Caledonia. The 1948 seems to be an enlargement of the 1928, or at least a part of it. The higher values of the 1938 set from Mauritania show a pleasant camping scene; one advantage they have over us is the weather.

Complete instructions for wood working and weaving a SEAGRASS-TOP STOOL

OUR illustration here shows a neat little stool with a seat of woven seagrass. This material is very popular and chairs and stools covered with it give a room a cosy appearance, and it is very comfortable to sit upon.

The legs are worked up from $1\frac{1}{2}$ in. square wood; oak or beech being suitable. We give the length of the legs here as 12 ins., but they may be longer or shorter than this, according to choice. In Fig. 1 is shown the simple shaping of each leg with added measurements for setting out.

The eight rails connecting the legs consist of $\frac{1}{2}$ in. hardwood rods cut off in lengths of 11 ins. and glued into holes bored $\frac{1}{2}$ in. deep to receive the ends. The first thing to do in preparing the legs is to lay all the four pieces, after cutting them to length, side by side on

the left leg of the stool, shown in Fig. 1. Here it will be seen that the rails are set centrally in the width of the leg and are lower on two sides, that is they do not all follow round evenly.

Strength Joint

It is suggested, too, that the ends of the rails might in this case go into the legs a depth of 1 in., which is a distinct advantage regarding strength. If the latter course be adopted, the four lower rails will have to be 12 ins. long as against 11 ins. for the top four.

When boring the holes for the rods see the brace is held perfectly upright, and dip the ends of each rail in glue before driving them in.

Another necessary precaution is to make a shallow V cut along the ends of each rail so surplus glue and air may escape during the process of driving in.

Test the finished frame for squareness and see that equal measurements occur between all the legs so the weaving may be accurately carried out.

The Seagrass Top

The special seagrass for making the seat is obtainable in skeins or hanks and sold by weight. The seagrass is bought in long lengths and several yards should, therefore, be wound off on to a stick previous to commencing to weave. The simplest method of weaving is shown in Fig. 2, which gives a clear plan of the seat.

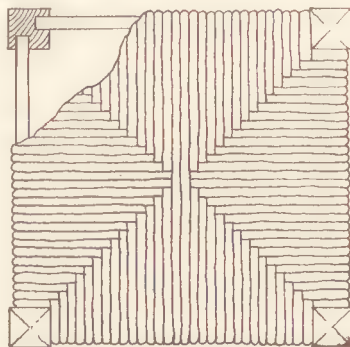
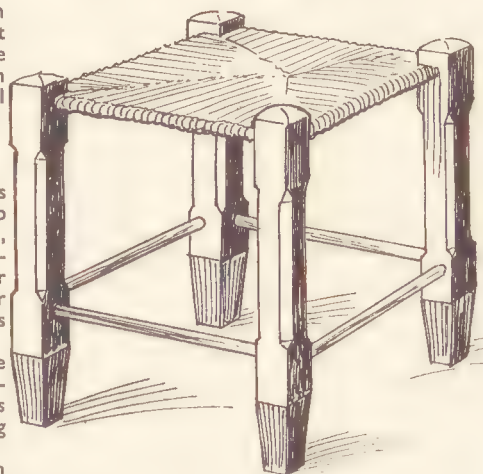


Fig. 2—Plan of top

In the diagram, Fig. 3, is shown exactly how to start and how the interlacing of each strand is made. In the end of the seagrass first make a knot and then, putting in a small staple, fix the seagrass to one of the rails as shown. Now carry the seagrass over rod (A) and under it and over and under (B) to (C).

Here it goes over and under and is brought back over (A) again and under on to (D) where it passes over and under again and is brought up over itself and over rod (C) again and so on to (B) where



it passes over and under again and so over (D).

Close Weaving

At this point we have completed one round and have arrived at the starting point where the interlacing process is repeated. It should be explained, perhaps, that the seagrass is purposely shown very slack and the thickness exaggerated in the diagram, and that in actual weaving, of course, each turn is drawn tightly as possible over the rails.

Each time the seagrass is brought over the rods, too, it must be kept hard up against its neighbour, so that the spaces are completely filled and all strands kept evenly and straight across.

Joining

When it is necessary to make a join in the seagrass, the knot should be made underneath and, therefore, out of sight. For sake of strength make the well-known reef-knot, shown as an enlarged diagram in Fig. 3.

The legs and the four lower rails should be stained with oak or mahogany stain and afterwards waxed and brushed up or rubbed with soft rag. If it is required to paint the stool, then it should have an undercoating of suitable paint and the finish of enamel or cellulose enamel.

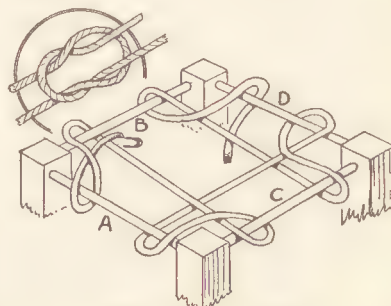


Fig. 3—How to weave

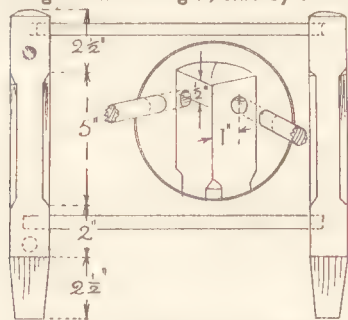


Fig. 1—Details of construction

the bench or table, keeping one end hard up against a straight edge or block of wood.

Now set out the distances from the foot end, as shown in Fig. 1, and mark across them all in one operation, using a tee square or a try square for this purpose.

Next draw lines in pencil across the diagonals on the top ends of the legs. These lines form guides for shaping, as shown in the enlarged detail in Fig. 1. Note also the lower extremities of the legs taper off to 1 in., this again being set out on all faces of the legs as a guide for cutting.

Rails

Looking again at the detail in Fig. 1 we note the holes for the rods are centred $\frac{1}{2}$ in. down from the shaping line at the top, and 1 in. from the back edge of each leg. All four of the lower rails are spaced similarly, the plan, Fig. 2, shows the arrangement clearly in a section of the top surface.

The positions of the centres of the rods are again drawn on all four surfaces at one operation as for the general shaping of the legs. With a $\frac{1}{2}$ in. diameter twist drill all the holes are made $\frac{1}{2}$ in. deep. It might be a good plan, to gain strength, in the general construction of the stool, to arrange the rails as shown on

Crinoline Lady Table Mat Holder—(Continued from page 153)

figure. That is to be later painted with gay enamels and should be given a coat of grey flattening paint to ensure a more pleasing finish.

Drill a small hole, with a Hobbies drill point at the three positions marked. (A in the lady), (B and C in the back). Glue the three pieces as indicated in Fig. 1, and before the pieces set in position, tap a gramophone needle just below the surface of the wood in holes (A), (B) and (C). Make sure the back

section and the crinoline front section set squarely on the base section. When the three pieces are perfectly secured, and the glue dry, the holes can be filled with plastic wood.

Painting

The success of this model can be assured or ruined by the care with which the painting is carried out. It is much better to take time over each stage, letting the colours dry, rather

than spoiling the effect by being too eager to complete the model. The full size pattern gives the actual marking.

The following colours are suggested for the crinoline figure, although, of course, they can be varied to suit individual taste. The actual crinoline skirt, Cambridge blue, and the folds in Oxford blue. Muff, white with shadow lines in dark blue. Bodice or coat in magenta or dark red. Front of blouse and collar in yellow with buttons in blue and brooch at the neck in green. Bonnet, orange, with dark blue lines and shadow to indicate back of the bonnet.

Neck, pale pink. Parcel, deep pink, and string lines in dark blue.

The attractiveness of the model will be greatly increased if the corners of the folds on the actual crinoline are lightly shaded in dark blue with a half dry brush in the manner of the effect obtained by an air-brush. As this operation, however, needs a certain facility with a brush, it would be better, if this particular effect were obtained by the less experienced, by small fine lines.

Finishing

To add the all important 'finishing touch', a piece of felt or baize should be glued to the underside of the base. Place the mats in the holder, and then wrap the whole model in Cellophane paper. (289)

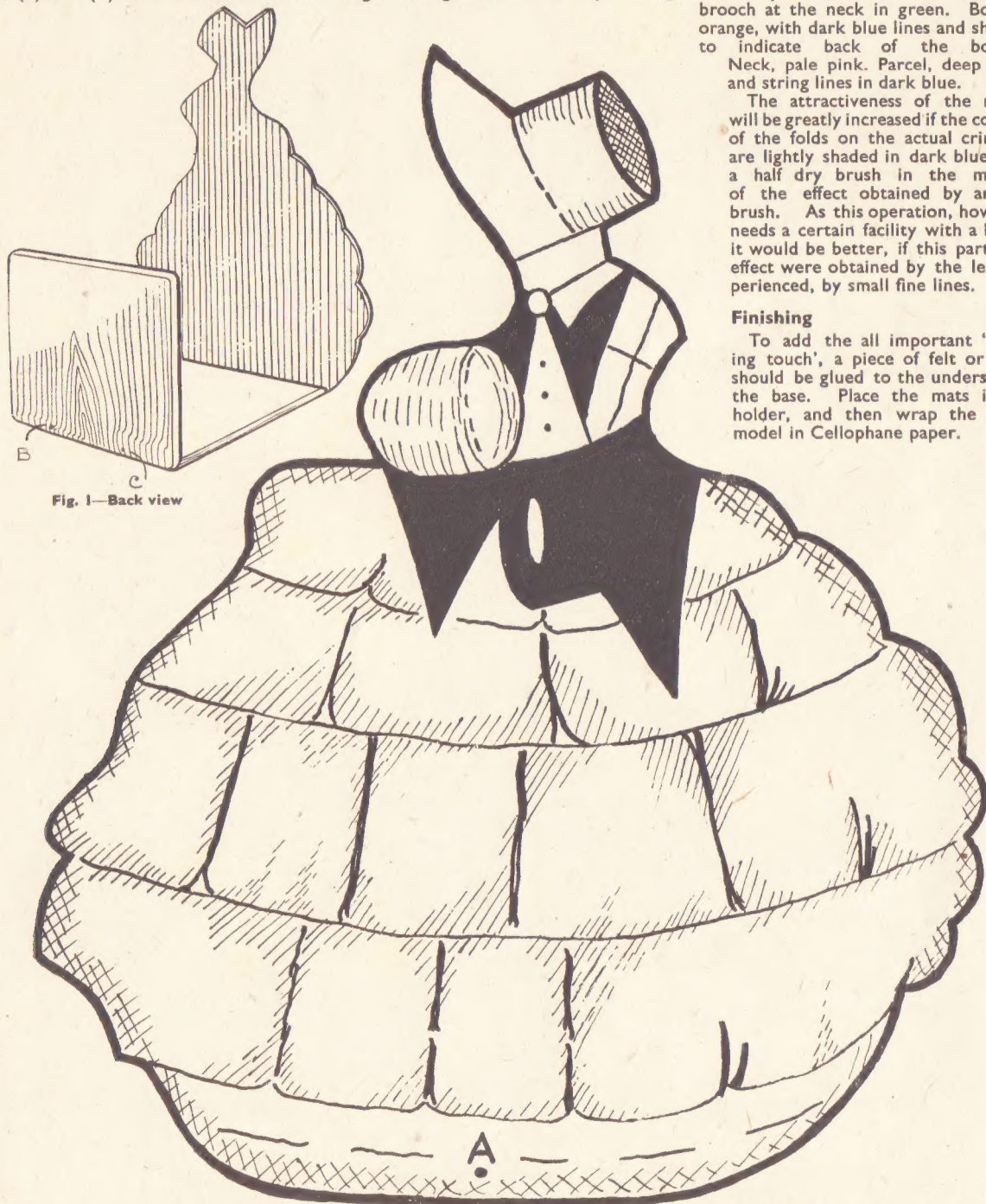


Fig. 1—Back view

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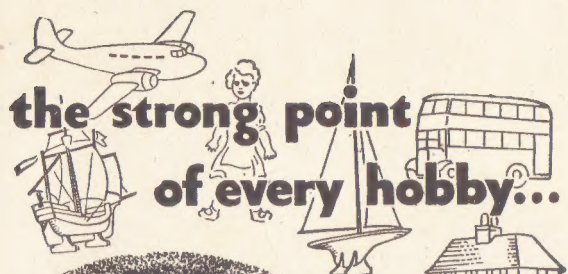
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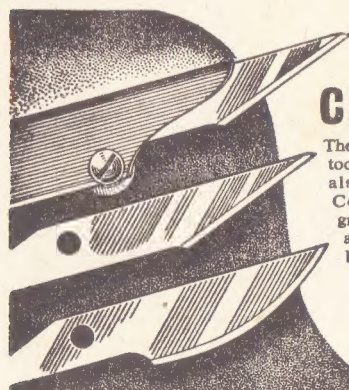
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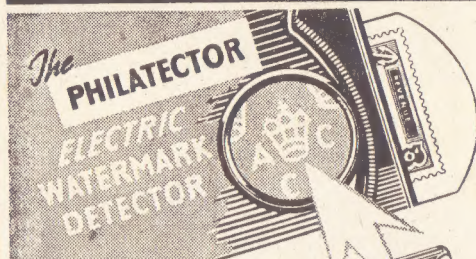
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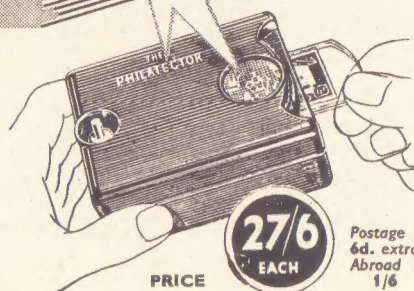
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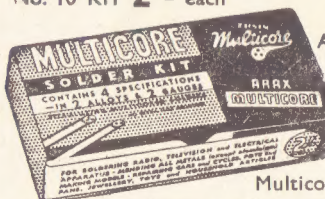
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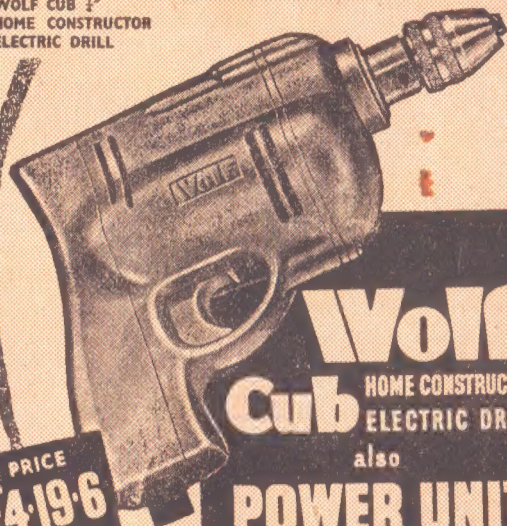
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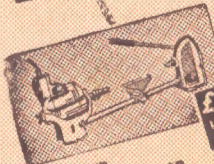
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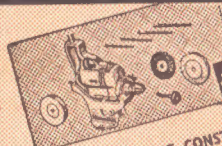
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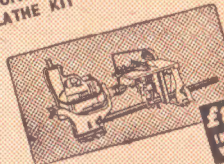
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